

DRAFT
SITE MANAGEMENT PLAN

REMEDIAL DESIGN
CHEROKEE COUNTY OU8 RAILROADS SITE
CHEROKEE COUNTY, KANSAS

Prepared for:



U.S. Environmental Protection Agency Region 7
11201 Renner Boulevard
Lenexa, Kansas 66219

EPA Contract EP-S7-05-05
Task Order 0073

March 2017



HGL
HydroGeoLogic, Inc

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Prepared by:

HydroGeoLogic, Inc.
6340 Glenwood, Suite 200
Building #7
Overland Park, KS 66202

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LIST OF ACRONYMS AND ABBREVIATIONS

AES	Architect and Engineering Services
AHA	activity hazard analysis
CHMM	Certified Hazardous Materials Manager
CIH	Certified Industrial Hygienist
CSP	Certified Safety Professional
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
FSP	Field Sampling Plan
GPS	global positioning system
HGL	HydroGeoLogic, Inc.
HSP	Health and Safety Plan
KDHE	Kansas Department of Health and Environment
mg/kg	milligrams per kilogram
O&M	operation and maintenance
OSHA	Occupational Safety and Health Administration
OU	operable unit
P.E.	Professional Engineer
P.G.	Professional Geologist
POC	point of contact
PPE	personal protective equipment
QA	quality assurance
QA/QC	quality assurance/quality control
QAPP	Quality Assurance Project Plan
QC	quality control
RA	Remedial Action
RAO	remedial action objective
RI	Remedial Investigation
ROD	Record of Decision
RD	Remedial Design
SAP	Sampling and Analysis Plan
SMP	Site Management Plan
SSHO	Site Safety and Health Officer
SOP	Standard Operating Procedure

LIST OF ACRONYMS AND ABBREVIATIONS (Continued)

TOM	Task Order Manager
TOPO	Task Order Project Officer
XRF	x-ray fluorescence

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1.0 INTRODUCTION

The U.S. Environmental Protection Agency (EPA) Region 7 tasked HydroGeoLogic, Inc., (HGL) to prepare a remedial design (RD) for Operable Unit (OU) 8 Railroads, located in Cherokee County, Kansas (Figure 1.1). This work is being executed under Architect and Engineering Services (AES) Contract EP-S7-05-05, task order 0073. The purpose of this task order is to prepare an RD for the selected remedy as defined in the Record of Decision (ROD) Amendment issued in September 2016. The RD is generally defined as those activities to be undertaken to develop the final plans and specifications, general provisions, and special requirements necessary to translate the ROD into the remedy to be constructed under the Remedial Action (RA) phase. The RA is generally defined as the implementation phase of site remediation or construction of the remedy, including necessary operation and maintenance (O&M), performance monitoring, and special requirements. The RA is based on the RD to achieve the remediation goals specified in the ROD Amendment.

This Site Management Plan (SMP) provides the Site background, details the scope of HGL's role on the project, establishes the roles and responsibilities of involved parties, and discusses how site activities will be managed and executed to assure that the objectives of this task order are achieved.

1.1 SITE BACKGROUND

The Cherokee County Superfund Site spans 115 square miles and represents the Kansas portion of the Tri-State Mining District. The Tri-State Mining District covers approximately 2,500 square miles in northeast Oklahoma, southwest Missouri, and southeast Kansas. The Tri-State Mining District was one of the foremost lead-zinc mining areas of the world and provided nearly continuous production from about 1850 until 1970. During this period the district produced an estimated 500 million tons of ore, with about 115 million tons produced from the Kansas portion of the district. EPA has formerly listed four mining-related Superfund Sites in the Tri-State Mining District: the Tar Creek Site in Oklahoma; the Jasper County and Newton County sites in Missouri; and the Cherokee County Site in Kansas.

The Cherokee County Superfund Site is divided into nine OUs:

- OU1 – Galena Alternative Water Supply,
- OU2 – Spring River Basin,
- OU3 – Baxter Springs subsite,
- OU4 – Treece subsite,
- OU5 – Galena Groundwater/Surface Water,

- OU6 – Badger, Lawton, Waco, and Crestline subsites,
- OU7 – Galena Residential Soils,
- OU8 – Railroads, and
- OU9 – Tar Creek Watershed.

These OUs encompass most of the area where mining occurred within the Site and where physical surface disturbances were evident. The Site consists of mine tailings; and soil, sediment, surface water, and groundwater contaminated with heavy metals (principally lead, zinc, and cadmium). The primary sources of contamination at the Site are the residual metals in the abandoned mine workings, chat piles, and tailing impoundments in addition to historical impacts from smelting operations. Numerous remedial and removal actions have taken place throughout the Site as noted in RODs and Five-Year Reviews for the Site. OU8, the subject of this SMP, addresses inactive rail lines only (Figure 1.1). While cadmium has been a contaminant of concern at other OUs, the OU8 RA addresses only lead and zinc contamination based on the Risk Assessment conducted during the Remedial Investigation (RI).

1.2 SCOPE OF HGL'S ROLE ON THE PROJECT

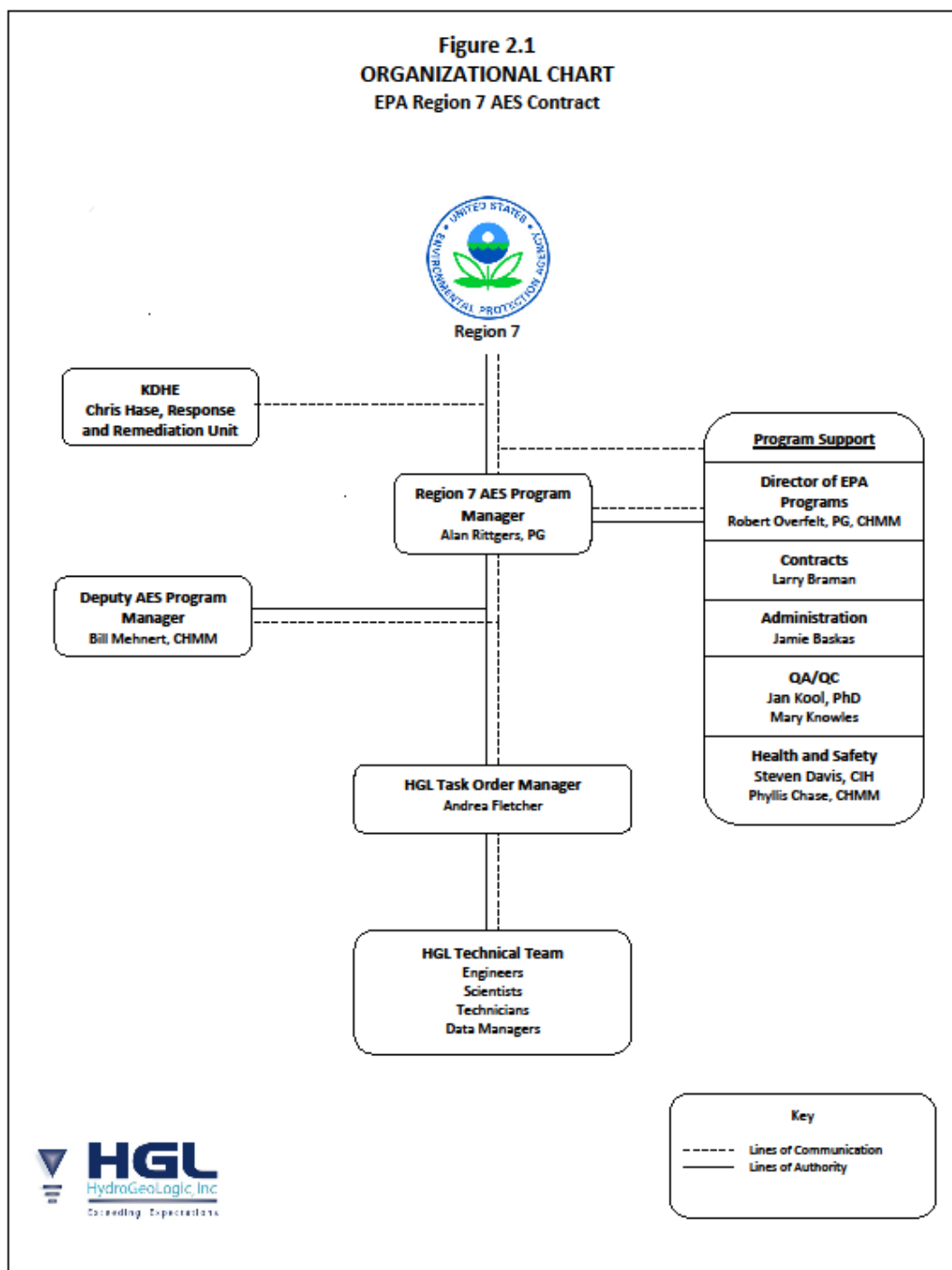
Under this task order, HGL will conduct additional field investigation activities to fill in data gaps from the RI conducted in 2013, and will further characterize the nature and extent of mining wastes along the rail lines. In addition, HGL will develop a design strategy that meets the remedial action objectives (RAOs) as specified in the ROD. The major components of the selected remedy and RD include:

- Develop topographic base maps for the former railway beds and adjacent easements; obtain ground control as needed to develop the topographic base maps; and conduct field surveys of existing features within and along the railway alignments.
- Conduct a field investigation in areas not previously investigated to better define the thickness of surficial mine waste following the same approach used during the RI. The investigation will include field reconnaissance of selected areas to document access and other Site features.
- Prevent exposure of ecological receptors to lead and zinc in mine waste exceeding 1,770 milligrams per kilogram (mg/kg) and 4,000 mg/kg, respectively.
- Excavate chat accumulations and soil exceeding the above listed action levels for lead and zinc in designated areas and dispose of wastes in current or future planned consolidation areas within OU3 and OU4.
- Backfill excavated areas with clean soil, grade to provide positive drainage, and revegetate the disturbed areas. Erosion and sediment controls will be maintained while the vegetative cover is established.

The RA is the implementation and construction of the OU8 Site remedy, including necessary O&M, performance monitoring, and special requirements.

2.0 PROJECT MANAGEMENT AND COMMUNICATION

This section describes the personnel, companies and agencies involved in the Cherokee County OU8 Railroad Site project and the roles, responsibilities, and authority of each. The organizational chart provided as Figure 2.1 illustrates the lines of communication and authority for the agencies and firms involved in the project.



2.1 ROLES OF EACH FIRM OR STAKEHOLDER

The primary firms/agencies involved in the Cherokee County OU8 Railroads Site project are EPA, Kansas Department of Health and Environment (KDHE) and HGL. The contact information for the primary point of contact (POC) at each firm/agency is summarized in Table 2.1.

Table 2.1
Cherokee County OU 8 Railroads Site
Points of Contact

Name	Firm/Agency	Title	Contact Information
Elizabeth Hagenmaier	EPA Region 7	TOPO	U.S. EPA Region 7 11201 Renner Boulevard Lenexa, KS 66219 913/551-7939
Chris Hase	KDHE	Response and Remediation Unit	1000 SW Jackson, Suite 410 Topeka, KS 66612-1367 785/296-2866
Andrea Fletcher	HGL	TOM	HGL, Kansas City Operations 6340 Glenwood, Building 7, Suite 200 Overland Park, KS 66202 913/317-8860

EPA is the lead regulatory agency for this project and has the ultimate authority in any decision-making process. Ms. Elizabeth Hagenmaier is EPA's Task Order Project Officer (TOPO) for the Site and is the primary EPA POC for the project. EPA will assist with identifying the property owners and obtaining access agreements with them.

KDHE is the state regulatory agency for the project. KDHE has joint authority with EPA to review and provide input on project-related documents. Mr. Chris Hase is the KDHE contact for the entire Cherokee County site.

As EPA's contractor, HGL will conduct site activities as specified in the Statement of Work and detailed in the task order proposal dated December 14, 2016. Ms. Andrea Fletcher is HGL's Task Order Manager (TOM) for the project. Ms. Fletcher will be assisted by Mr. Chris Robb, Professional Engineer (P.E.). HGL is responsible for accomplishing all the task elements necessary to produce a final design that will achieve the RAOs specified in the OU8 ROD, including:

- Preparing planning documents;
- Coordinating access with the property owners for field activities;
- Supporting EPA's Community Involvement efforts;
- Develop topographic base maps for the former railway beds and adjacent easements;
- Excavating test pits to determine subsurface waste volume and characteristics;

- Conducting field screening of mining waste and soil samples to characterize the mining wastes; and
- Preparing preliminary, prefinal, and final design documents.

2.2 ROLES AND RESPONSIBILITIES OF KEY PERSONNEL

2.2.1 U.S. EPA Region 7

The EPA TOPO is Remedial Project Manager Elizabeth Hagenmaier. Ms. Hagenmaier is the primary contact at EPA for authorizing and coordinating work at the OU8 Railroads Site. She will be responsible for:

- Reviewing project deliverables prepared by HGL.
- Maintaining communications with the HGL TOM regarding project status.
- Reviewing monthly status reports.
- Providing oversight of field efforts as desired.
- Facilitating and maintaining communication with the stakeholders and others, where applicable.
- Tracking work progress against planned budgets and schedules.
- Scheduling EPA personnel and material resources.

2.2.2 Kansas Department of Health and Environment

Mr. Chris Hase, Response and Remediation Unit, is the POC at KDHE and will be responsible for the following:

- Reviewing project deliverables prepared by HGL and providing comments to the EPA TOPO.
- Maintaining communications with the EPA TOPO regarding project status and regulatory requirements, if necessary.
- Providing oversight of field efforts as desired.
- Facilitating communications with other state agencies, as required, such as the KDHE water quality section, and the KDHE air permitting section.

2.2.3 HydroGeoLogic, Inc.

2.2.3.1 Program Manager

The HGL EPA AES program manager is Mr. Alan Rittgers, Professional Geologist (P.G.). As program manager, Mr. Rittgers is responsible for the overall management of the EPA AES contract and assuring that all appropriate personnel and administrative resources are allocated to meet project objectives.

2.2.3.2 Task Order Manager

Ms. Andrea Fletcher is the TOM. She reports to the program manager and is responsible for providing direction to the project staff and managing project activities. In addition, the TOM provides a POC for EPA Region 7 and KDHE. Principal roles and responsibilities include coordinating with the program manager to select project staff and assign responsibilities; communicating with the EPA Region 7 TOPO; and developing, monitoring and complying with all project budgets, schedules and deliverables. As TOM, Ms. Fletcher is responsible for the overall management and coordination of the Cherokee County OU8 Site activities to be conducted by HGL. This includes the following functions:

- Maintaining communications with the EPA TOPO regarding the status of the project.
- Tracking work progress against planned budgets and schedules.
- Overseeing preparation of requisite planning documents: Field Sampling Plan (FSP), Quality Assurance Project Plan (QAPP), and Site-specific Health and Safety Plan (HSP).
- Preparing monthly status reports.
- Incorporating and informing EPA of field changes and associated cost implications.
- Assuring that all HGL field activities are conducted in accordance with the Site-specific HSP.
- Notifying the HGL AES program manager, quality assurance (QA) manager, or project QA coordinator immediately of significant problems affecting the quality of work or the ability to meet project objectives.
- Scheduling personnel and material resources.
- Implementing field aspects of the design investigation involving HGL personnel.
- Procuring and managing subcontractors.
- Implementing corrective actions resulting from staff observations, QA/quality control (QC) surveillance, and/or QA audits.
- Coordinating with the EPA laboratory regarding analytical services, data validation, and QA issues related to sample analysis.

2.3 HEALTH AND SAFETY MANAGEMENT

HGL maintains a Corporate Health and Safety Program, outlined in the Corporate Safety and Health Manual, that is overseen by Mr. Steven Davis. Mr. Davis is a Certified Industrial Hygienist (CIH) and Certified Safety Professional (CSP) with over 33 years of experience in the environmental industry managing corporate industrial hygiene, safety, medical monitoring and workers' compensation programs. HGL's Corporate Safety and Health Manual is compliant with Occupational Safety and Health Administration (OSHA) standards. The Corporate Health and Safety Manual is revised annually. The program is headed by Mr. Davis, who reports directly to the president of the company on all safety and health matters. HGL provides extensive safety and health training to all its employees and the training program is in compliance with OSHA standards. HGL personnel assigned to the Cherokee County Site OU8 Site will be provided

additional training in the hazards associated with site-specific operations and chemical exposures. All HGL personnel have full authority to stop work when, in their judgment, an unsafe condition exists. As part of the Corporate Health and Safety Program, HGL maintains an extensive Safety and Health and Medical Monitoring Program to ensure the safety of its employees. HGL has an impeccable safety record and our three-year average Experience Modification Rate is 0.80.

Mr. Davis or his designee, Ms. Phyllis Chase, Certified Hazardous Materials Manager (CHMM), will review the Site-specific HSP prepared for the Cherokee County OU8 project. Mr. Davis has designated responsibility for on-site health and safety to Mr. Beatty Hean, who will serve as the Site Safety and Health Officer (SSHO). As the project SSHO, Mr. Hean is responsible for:

- Assuring that the HSP is read and signed by all field personnel, including subcontractors.
- Contacting the HGL CIH if changes to an activity hazard analysis (AHA) are necessary, or if a new AHA as needed.
- Assuring that field activities are conducted in accordance with the HSP.
- Documenting health and safety matters in the field logbook.
- Communicating as necessary with the regarding health and safety issues.

2.4 MANAGEMENT OF WORK PRODUCT QUALITY

Dr. Jan Kool, PhD, is HGL's Corporate QA/QC Officer and oversees QC for HGL's Engineering and Construction Division. Dr. Kool has served as the Corporate QC officer on numerous EPA and U.S. Army Corps of Engineers contracts and on contracts for other Department of Defense clients. Dr. Kool has designated authority for QC matters on the Cherokee County OU8 Site to Ms. Mary Knowles. Ms. Fletcher will report directly to Dr. Kool on matters of QC. QC is independent of line management: Mary Knowles will review project planning documents and deliverables, audit project logbooks as necessary, assure that Site work is conducted in accordance with approved planning documents, and report any QC discrepancies to the Corporate QA/QC Officer and assure that appropriate corrective actions are taken.

3.0 COMMUNITY INVOLVEMENT

3.1 PROPERTY ACCESS AGREEMENTS

The private properties that may be affected by Site activities will be identified by HGL and reviewed by EPA. HGL will determine affected landowners by reviewing Cherokee County tax maps and other contact information from previous work in the area. Once affected landowners have been identified, HGL will use an access agreement previously approved by EPA. After EPA approves the access agreement, HGL will mail access agreements to each affected landowner via certified mail (return receipt) or Federal Express to obtain signed access agreements with each property owner. The mailing will include a stamped, self-addressed envelope for return mail to HGL's Overland Park office. Notification letters will be sent to the property owners informing them of the schedule for fieldwork and design activities. (Note: Any contact with property owners initiated by HGL team members will be handled by or coordinated through the HGL TOM.)

3.2 COMMUNITY INVOLVEMENT PLAN

EPA has prepared a Community Involvement Plan for the entire Cherokee County Superfund Site and, with support from KDHE, will be the lead agency for community involvement activities. HGL will support EPA with specific activities as may be requested during the RD. These activities are expected to include coordination with the property owners during field activities and review of the RD.

4.0 FIELD INVESTIGATION/DATA ACQUISITION ACTIVITIES

4.1 PREPARATION OF PLANNING DOCUMENTS

HGL will prepare planning documents to outline and document how this task order will be executed, establish the health and safety protocols to be followed, and present the quality measures to be implemented to assure that data quality objectives (DQOs) are met. The makeup and organization of HGL's Task Order execution team and how they will coordinate Site work with EPA is discussed in Section 2.0. The planning documents that will be prepared to support Site work are discussed below.

4.1.1 Field Sampling Plan

HGL will update the FSP prepared for the OU8 RI to describe the number, type, and locations of samples; the sample collection methods; and type of analyses required for the RD. Background documents will be reviewed to identify data needs for the RD and bid documents. The sampling strategy and types of analyses needed to fulfill data needs will be presented in the FSP.

Field sampling activities will focus on topographic mapping/surveys and test pit exploration at the site to supplement the existing RI data and define the waste areas to be addressed by the RD. Field sampling will consist of grab samples for screening of the contaminants of concern. X-ray fluorescence (XRF) will be used as a qualitative screening tool to characterize levels of zinc and lead in the waste materials and help determine the fill/native soil interface for use in calculating waste volumes. Confirmation samples will be submitted to the EPA laboratory for chemical analyses.

The FSP will be prepared in a final version only as the version from the RI will be revised/amended and it is assumed that there will be only minor comments to address that will require only replacement pages. The FSP will be combined with the QAPP, as discussed in Section 4.1.2 below, and provided to EPA as a Sampling and Analysis Plan (SAP).

4.1.2 Quality Assurance Project Plan

HGL will update the site-specific QAPP prepared for the OU8 RI that presents the quality procedures that will be implemented during the completion of RD field activities to ensure that the project DQOs are achieved. The QAPP will specifically address the QA/QC requirements for XRF field screening and documentation of field observations. XRF field screening will be accomplished in general accordance with the procedures outlined in EPA Method 6220, *Field Portable X-ray Fluorescence Spectrometry for the Determination of Elemental Concentrations in Soil and Sediment*, Revision 0, January 1998. The QAPP will be prepared in accordance with EPA QA/R-5 *EPA Requirements for Quality Assurance Project Plans*, Final, March 2001, and companion document EPA/G-5, EPA 600/R-98-018 *Guidance for Quality Assurance Project Plans*, dated February 1998. The QAPP will discuss the project objectives and organization, functional activities, and QA/QC protocols that will be used to achieve the desired DQOs. HGL will use EPA QA/G-4 *Guidance for the Data Quality Objectives Process*, Final, August 2000, to define DQOs for sample collection at the site. The QAPP will be prepared in draft and final versions.

As described in Section 4.1.1, the QAPP will be combined with the FSP in the SAP in draft and final versions.

4.1.3 Health and Safety Plan

HGL will update the site-specific HSP prepared for the RI that defines and documents the health and safety procedures to be implemented for the project. This document will incorporate by reference the HGL corporate HSP (see Section 2.3), and will be inclusive of all activities to be conducted under this task order. The HSP will meet the requirements of 29 Code of Federal Regulations 1910 and 1926, National Institute of Occupational Safety and Health *Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities* (1985), EPA Order 1440.1 - Respiratory Protection, and EPA Order 1440.3 - Health and Safety Requirements for Employees Engaged in Field Activities.

4.2 TOPOGRAPHIC MAPPING

HGL will procure subcontractor services for aerial surveys and topographic mapping of the OU8 Railroads Site. Fieldwork for the mapping services will include establishing ground control (x, y coordinates and elevation) at selected points. Digital data will be collected at a 1 inch equals 50 feet scale for planimetric features that are identifiable on, or interpretable from, the aerial photographs. Map features for this scale of planimetric mapping typically include buildings, roads, drainage features, bridges, culverts, fences, driveways, poles, trees and similar features. The topographic maps will be prepared in AutoCAD format and will serve as base maps for the RD drawings.

4.3 TEST PIT EXCAVATION AND LOGGING

Planned fieldwork includes excavating test pits distributed across the waste areas to supplement characterization data from the RI and identify the thickness and general characteristics of the waste materials. HGL plans to use a hand-held global positioning system (GPS) unit to survey and layout the test pit locations. GPS technology will also be used to field map other pertinent features of the waste areas. GPS survey points can be easily plotted on base maps for use during the design activities.

Test pits will be excavated and logged to document the thickness of the mining wastes, determine the characteristics (grain size, texture, etc) of the waste materials. XRF screening of soil/waste samples will be conducted during test pit excavation to help characterize the waste/native materials. Information/data collected in the field will be documented in field logbooks and on field test pit logs.

A local subcontractor with health and safety trained personnel will be used for this subtask. A backhoe or excavator with a minimum reach of at least 8 feet will be used to excavate the test pits.

4.4 XRF SCREENING

XRF screening will be used as a tool to augment visual observations delineating the interface of mining wastes with native soil in the sidewalls and bottom of the test pits. The fill/native soil

interface is often very apparent: chat occurs as angular gravel, which is quite distinguishable from the native soil, which is a clayey, organic rich material. However, in some cases this interface is not readily discernable. The XRF unit will be used to confirm visual observations. Test pits will be a maximum of four feet in depth.

XRF readings will be recorded on the test pit logs described in Section 4.3

4.5 GPS FIELD MAPPING

A handheld GPS unit will be used to document the x,y coordinates of the test pit locations following the EPA Standard Operating Procedure 2341.01, *R7 Geospatial Data Deliverables*. Additionally, the GPS unit may be used to identify other site features, including the boundaries of wooded areas, access points, or areas requiring special treatment. If thick vegetation does not allow direct measurement of a location, the individual taking the measurement will move to the nearest location where the location can be recorded, and information about the necessary offset will be recorded. The mapping data will be recorded in a field logbook and as an electronic file recorded by the GPS device.

4.6 SITE CONTROL

The areas of mining waste encompass large geographic areas across the site. Many of the affected properties are located in remote areas. Access is limited in some cases to unimproved vehicular trails. Fencing may be present along portions of the areas to be investigated. HGL will control site access during excavation and screening activities as described in the HSP. Field personnel will be required to check in with the TOM (or her designee) on a daily basis during the fieldwork. Any personnel within the work zone will be required to don safety glasses, a hard hat, and hearing protection. The provisions for personal protective equipment (PPE) will be detailed in the HSP. All personnel, including subcontractors, will be required to follow the PPE requirements of the HSP and the work practices detailed in this SMP.

5.0 REMEDIAL DESIGN ACTIVITIES

5.1 PRELIMINARY DESIGN

HGL will prepare a preliminary report summarizing the results of field mapping and design concepts for the waste excavation, haul routes and waster consolidation. The letter report will include as appendices field data collected, including a summary of XRF screening and laboratory data, preliminary volume calculations, and ecological and wetland survey results. Drawings will be prepared using AutoCAD and will be based on the deliverables provided from the aerial/photogrammetric subcontractor. The drawings will identify the mine waste areas to be excavated, and the locations of consolidation areas to be used for disposal.

A preliminary cost estimate (+50 percent and -30 percent accuracy) will be prepared as part of the preliminary design using Excel format.

5.2 PREFINAL/100% DESIGN

The prefinal design will be submitted at 90 percent completion and the 100 percent design will be final.

FIGURE(S)

